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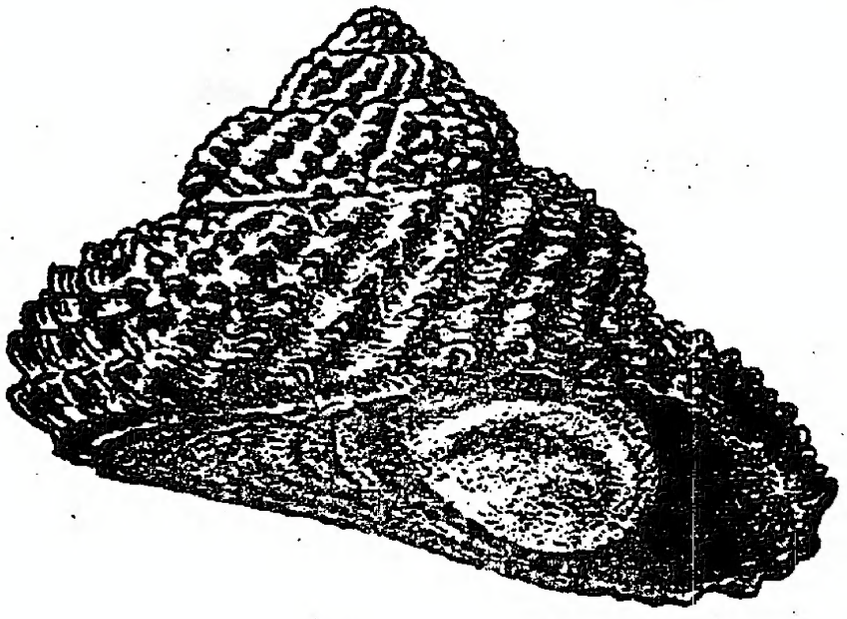

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MOLLUSCA FROM THE SOUTHERN HEMISPHERE SOUTH OF NEW ZEALAND AND THEIR RELATIONSHIPS

by Dr R.K. Dell

Just to the south of New Zealand we encounter one of the largest marine biogeographical regions we know. The fauna of the Antarctic and Subantarctic has little effect upon the living molluscan fauna of New Zealand; much less so than the fauna of Australia or even the Indo-Pacific. If we look at the usual map of the world on the Mercator projection, the relationships of the faunas of the land masses in the Southern Ocean make very little sense. If, however, we look at a south polar projection with the Antarctic continent in the centre we have a much better chance to appreciate relationships. The central Antarctic continent is surrounded by sea, with the three major southern continents, Africa, Australia and South America projecting into the Southern Ocean, together with the minor New Zealand and its associated southern islands, the Aucklands, Campbells, Bounties and Antipodes. Set in scattered fashion in the intervening seas are the small islands of Kerguelen, Heard, Macquarie, Crozets, Bouvet and Prince Edward. Southern South America projects furthest towards the Antarctic continent and in the same area an extension of the Antarctic continent, the Antarctic Peninsula, extends furthest to the north. A series of island groups extends in a wide arc between these two continental extensions, the islands of the Scotia Arc and these island groups, the Falklands, South Georgia, South Sandwich Islands, the South Orkneys and the South Shetlands supply a series of possible stepping stones between southern South America and the Antartic continent.

The seas between Antarctica and the other land masses of the Southern Hemisphere are everywhere deep enough to cut off the shallower water faunas from contact with one another. The molluscs which live in these deep seas are abyssal or bathyal and are related to molluscs which live in other deep sea basins elsewhere in the world, rather than to the molluscs of Antarctica, or of America, Africa, Australia or New Zealand.

Two major water movement systems in the Southern Hemisphere indicate what kinds of mechanisms are available to assist the dispersal of shallow water molluscs from one area to another. Around the Antarctic continent water movements are in an anti-clockwise direction (the easterly Antarctic Current). This movement must be a factor in assisting dispersal around the shores of the continent. Further to the north, extending over a much wider area, the stronger and more consistent West Wind Drift is a major mechanism for the dispersal of southern organisms. These two current systems and the series of stepping stones through the islands of the Scotia Arc supply mechanisms which can explain the distribution patterns of many southern molluscs.

Around the Antarctic continent we find few areas where rocky coasts run straight down into the sea. Where they do, such coasts are usually covered by ice shelves for a large part of the year. Such rocky outcrops and the few beaches that occur are largely scoured clear by the movement of such ice shelves. The subantarctic islands may have exposed rocky shores and beaches and can therefore develop a shallow water fauna which is almost completely lacking in the Antarctic proper.

There is no pattern for the distribution of Antarctic and Sub-Antarctic mollusca. What we have are a number of different faunas and divisions of faunas, and we still do not always have enough data to classify a distribution system in detail.

Some distribution patterns can be easily enough defined:-

(1) A broad southern fauna, widely distributed around the Antarctic continent, and occurring on most (if not all) the subantarctic islands and extending into southern South America.

(2) A retricted Antarctic fauna occurring around the Antarctic continent and to a greater or lesser degree into the islands of the Scotia Arc and perhaps reaching the tip of southern South America.

(3) A fauna restricted to the subantarctic islands and not extending to the Antarctic continent.

(4) A small group of species which occur in some sub-antarctic islands, but which show relationship to the nearest major land mass (e.g. many of the species occurring off the Auckland Islands and off Campbell Island, which show close relationships to New Zealand).

(5) Species which appear to be endemic to relatively small areas, (e.g. Kerguelen Island, the Ross Sea, South Georgia). South Georgia is an interesting area in this respect. Not too far to the east, and in the same latitude as Tierra del Fuego and the Falkland Islands, South Georgia is influenced by cold water currents and has a typically Antarctic fauna with a high percentage of endemic forms.

But the difficulties of fitting isolated areas into a bio-geographical scheme are well illustrated by the example of Macquarie Island. Sometimes considered to be part of the New Zealand faunal area, it belongs politically to Australia. It is very isolated, although closer to New Zealand than to any other land mass, but right within the influence of the West Wind Drift. Its molluscan fauna is obviously affected by each of these elements. Thus there is a small New Zealand element (Plumbelenchus, Tawera, Chlamys delicatula, Maurea, etc.); an element held in common with Kerguelen; a subantarctic element (Gaimardia, Kidderia, Margarella and Laevilitorina); and quite a large endemic element.

The Antarctic fauna proper has some very distinctive elements which appear to have been present for a long time, and which have no obviously close relatives. The large flexible-shelled pectinid Adamusium, the large thin-shelled Laternula, the common Antarctolima, and the fairly solid Cyclocardia are good examples of this group.

Another large group appear to have been derived from deep water forms. The large common Limopsis marionensis with a heavy brown epidermis and the turrid Aforia represent this element. A northern feature in the Antarctic mollusca is a kind of "explosive radiation", a tendency amongst a few groups for a large number of genera or species to be developed. Thus the family Trichotropidae are usually represented by one or two small species in any one faunal area.

In the Antarctic we recognise four genera with seven species, mostly relatively large forms. The Buccinacea are represented by some 23 genera, and in one of these genera (Chlanidota, a reasonably sized whelk), has 9 species, and another (Prosipho, a smaller shell) has 32. In general, however, many otherwise important families have only a single representative, and these may be small, rather aberrant forms. Thus around the Antarctic continent the important family Mytilidae is represented only by the small fragile genus Dacrydium and the only representative of the Arcidae is the small Bathyarca.

In the subantarctic area we see examples of molluscs with wide, but sometimes quite sporadic distribution patters. Diloma nigerrima is known only from New Zealand and from Chile; the pectinid genus Zygochlamys has one species found around New Zealand and off Macquarie, and another two from off Southern South America, and a fossil species from the Antarctic Peninsula. The bivalve genus Tawera occurs off New Zealand, off Macquarie, off southern South America, and off Tristan da Cunha and Nightingale Islands. At one point on the Antarctic-Pacific Ridge, more or less half way between New Zealand and southern South America the sea shallows to at least 549 metres. Collections made at this depth by the United States research ship "Eltanin" indicate an interesting fauna which includes Fusitriton, Puncturella, and examples of the large limid, Acesta, all of which are known from New Zealand and from the Magellan region.

Some general characteristics of the mollusca of the Antarctic continent may be noted. With a few exceptions such as Adamusium and Laternula they are not usually very large in size, nor are they very brightly coloured (Adamusium is again an exception). They are usually thin-shelled but may have a heavy epidermis. They often live attached to algae, or bryozoa, or even such things as the spines of sea urchins. Many of the species for which we have evidence are known to brood their young until they are fully developed. Many of their characteristics are those of shells found in cold water generally, both in deep water basins anywhere in the world and in the shallower but equally cold Antartic seas.

Editor's note ..... Dr Dell gave a lecture on this subject at the September meeting of the Wellington Shell Club, and illustrated his remarks with a large map of the Antarctic region. A large collection of Antarctic shells was on display.

AUSTRALIAN EQUIVALENTS OF THE NEW ZEALAND DILOMAS

by W.J. Paul

At the August meeting of the Club members brought from their collections their shells of the genus Diloma to discuss and check their identifications. As a result some members were able to improve the labelling in their collections.

This group of shells comprises one of the major communities in our intertidal fauna. On all rocky shores throughout New Zealand they abound and are no doubt the most noticeable type of intertidal shells.

On the other side of the Tasman Sea, in the same sort of ecological niche are related species, from Queensland round to Western Australia ----- shells of very similar structure and feeding habits. They too are a major part of the intertidal fauna. This was well stated by Dakin ("Australian Seashores" p 24) in the words "the genus Austrocochlea must be reckoned amongst the five commonest molluscs of the rocky shore if our types are arranged in order of abundance. No matter where you wander over the rocky flats of the ocean beaches from Queensland West Australia you will find myrriads of these lettle shells". These small Trochoid shells are commonly called "perriwinkles" in Australia; a name used in the United Kingdom for Littorina littorea. In New Zealand we have not created any common name for the group.

Over the years there has been some confusion as to the number of species which should be validly recognised in this group in Australia, and there have been divisions of opinion as to the generic names to be used. Without going into the question of whether such names as Fractarmilla, Chlorodiloma, Austrocochlea and Duloma should be used at generic or sub-generic status, we can, for the present purpose, accept the use of Austrocochlea for the whole series of species as has been done by several authors, and leave aside the academic disputation of validity of names.

In the same intertidal niche in which our New Zealand Dilomas live, there are seven species in the cooler waters of the southern shores of Australia.

Austrocochlea constricta Lamarck 1822

This is possibly the commonest of all intertidal shells in this area. It undergoes considerable variation over its large area of distribution which extends from Queensland right round to West Australia and including Tasmania. The heavily black and white striped form of the eastern coasts was popularly known under the name of obtusa Dillwyn 1817, but the use of that name however was shown to be incorrect, it having application to a quite different shell. A rather stunted variant found in marshy areas in Victoria had been called porcata Adams 1853. In South Australia a whitish heavily sculptured form had been named torri Cotton & Godfrey 1934. These are really regional variants of constricta.

Other synonyms are taeniatus Quoy & Gaimard 1834, multicarinata Chenu 1859, zebra Menke 1828, extenuatus Fischer 1878.

Austrocochlea crinita Philippi 1848

Restricted to Western Australia, this species is distinguished by the strong development of the apertural features, the closed umbilicus in adults, and the pattern of fine axial lines. There appear to be no synonyms for this species, which was the type for Pilsbry's genus Chlorodiloma.

Austrocochlea adelaidae Pilsbry 1849

Distinguished by the pattern of irregular lines producing a tessellated appearance, the green umbilico-columella area, and the bright yellow or red colour of the apex in worn examples, this shell is readily identified. It occurs from Bass Strait westwards into the Bight, and a bit beyond.

Synonyms are depressa Tenison Woods 1875 and australis Tenison Woods 1877.

Austrocochlea odontis Wood 1828

This species with its yellow diamond shaped spots is closely related to the last. It also has a green shaded area round the umbilicus and on the columella. It is found in Tasmania, Victoria and South Australia. There appear to be no synonyms.

Austrocochlea zeus Fischer 1878

Confined to South Western Australia. This is the shell illustrated in "The Shelled Gastropods of South West Australia" as Chrysostoma obtusa Dillwyn, an unfortunate error that has confused many collectors. An interesting feature of this shell is that in live shells the columella area is blue, but turns green after the animal dies. The shell has a whitish background with fine axial irregular lines.

Austrocochlea concamerata Wood 1828

This black shell with yellow spots or axial stripes is easily identified. The ribbed sculpture is much less prominent than in constricta. It is often found living in association with constricta. Its area of distribution extends from Queensland to Western Australia and inclusing Tasmania. Synonyms are striolatus Quoy & Gaimard 1834, fulgineus Watson 1886.

Austrocochlea rudis Gray 1826

Spread from the Gulf St Vincent westwards to South West Australia, this smooth surfaced, unsculptured very thick shell is readily distinguished from all the other species in the genus. The colour, yellowish white or grey is also distinctive. Synonyms are carbonaria Philippi 1848, melanoloma Menke 1843, chloropoda Tate 1879.

West Australian specimens appear to be usually larger than South Australian ones.

LYALL BAY ..... AN IMPORTANT LOCALITY FOR COLLECTORS

Of all the inshore localities of the southern part of the North Island Lyall Bay has made the greatest contribution to New Zealand molluscan records. The bay has an extensive fauna. In the early years of this century the area was intensively collected by Tom Iredale and Marjorie Mestayer. The result of their work was published in 1907 in Vol XL of the "Transactions of the New Zealand Institute". At that time the bay was very much in its natural state. Today it has been modified, mainly by the construction of Rongotai Airport. The lupin-covered sandhills are a thing of the past, and the contour of part of the foreshore in the vicinity of the airport has been altered. The actual beach structure is now artificial rather than natural in that area. These changes, together with the greatly increased population and the industrial developments have had an impact on the ecology of the bay. Whether the list of shells (198 species) collected by Iredale and Mestayer so long ago could now be duplicated by collecting is extremely doubtful. It may prove an interesting exercise to make an intensive study of the present fauna, for comparison with their list.

However, Lyall Bay retains a place of importance in New Zealand conchology as it is the type locality of a not inconsiderable list of molluscan species. Wellington collectors are therefore fortunate that they are able to collect topotypes (specimens from the type localities) of a number of forms of New Zealand molluscs. The inclusion of topotypes in collections adds considerable scientific value to them. In the absence of access to the original type specimens, which are held in museums and other scientific institutions, the possession of topotypes serves the very useful purpose of having key specimens for comparison. As key specimens, they enable the collector to correctly establish the identity of the species and enable comparison with similar species.

The following are species which have been originally collected at Lyall Bay, and have their type localities so recorded:-

Sizenone brevis (Hedley 1904)
Sinezona lyallensis (Finlay 1927)
Scissurona rosea (Hedley 1904)
Micrelenchus caelatus elongatus (Suter 1897)
Rissoa hamiltoni Suter 1898
Merelina lyalliana (Suter 1898)
Ovirissoa delli Ponder 1968
Rissoella flemingi Ponder 1968
Caecum digitulum Hedley 1904
Tasmalira vitrea (Suter 1908)

Lyall Bay is type locality of Tasmalira wellingtonensis Dell 1956, a synonym of vitrea)

Macrozafra nodicincta (Suter 1899)
Macrozafra subabnormis (Suter 1899)
Neoguraleus lyallensis (Murdoch 1905)
Siphonaria cookiana Suter 1909
Verticipronus mytilus Hedley 1904

It will be observed that none of the shells listed are large shells, and all except the last named are gastropods.

For the information of readers not familiar with the local geography, it should be stated that Lyall Bay is an indentation in the southern shore of the North Island facing into Cook Strait. The name is also applied to the Wellington city suburb surrounding the bay.

HEREWORTH SCHOOL SHELL COLLECTION

by Jill Griffiths

During 1980 I spent quite some time putting the New Zealand section of the Hereworth School Mollusca Collection into order and I relate herewith a few of the interesting facts which came to light with the task.

Hereworth School is an Independant, Preparatory, Boarding and Day School for boys in Havelock North, which celebrates its Centennial this year and it was in part due to this fact that the present Headmaster was attempting to resurrect the old school museum section which included the Shell Collection, during 1980. What more natural than for me to offer to help - I little knew then the magnitude of the task in front of me. However I certaibly learnt a lot during the experience and despite all, I really enjoyed it too.

Although the collection had quite a number of overseas shells with it these had no evidence of locality with them so I felt that perhaps they had been contributed more recently, and mainly for their large and glossy appearance. The New Zealand section, which appeared to have been begun in the mid-1940's by the then Headmaster, Mr John Buchanan, had originally been carefully named and catalogued but inevitably over the intervening years many specimens had been lost or broken. In order to present a more complete picture of the N.Z. Mollusca many of these missing species were replaced from our own collection. Perhaps unusually for this type of collection, but no doubt because of its very origins, many of the smaller and rarer shells were still present either in glass tubes or matchboxes, which incidentally had been laboriously painted black, filled with cotton-wool and then had small glass covers cut to fit exactly inside them. One couldn't help wondering whether this part of the operation had been carried out by John Buchanan himself or whether the boys of the School participated here, and if the latter, then was it reward or punishment which saw them forming the larger boxes from old tobacco boxes and out-of-date school certificates, with glue not staples mind, and then painting these and the matchboxes with what seemed suspiciously like blackboard paint.

Most of the smaller land snails were presented to the Collection by Mr Creagh O'Connor, an ardent and notable amateur collector whose particular interest in conchology lay with the land snails, whilst there were other notable contributions from Mrs Fairfield with shells from the Takapuna, Auckland area, and C.A. Fleming with shells from the Auckland Is, as well as A.W.B. Powell. Penion fairfieldae is named after Mrs Fairfield who was an amateur collector from Auckland and C.A. Fleming, later Sir Charles Fleming, became Head of Paleontology at the Geological Survey. A.W.B. Powell, who really needs no introduction to most of today's Shell Collectors, being as he is the author of both the checklist of New Zealand mollusca (Shells of New Zealand) and the more recently published manual of New Zealand shells (New Zealand Mollusca), identified many of the living specimens for Buchanan as well as adding to the collection himself. The majority of fossil

shells in the collection were identified by John Marwick, at that time Head of Paleontology at Geological Survey. Thus it can be seen that many of "the names" in New Zealand conchology contributed in various ways to the Hereworth School collection. There were also specimens presented by the Napier Museum, Geological Survey and by "W.H.P-T" and "J.A.McL.H." but unfortunately it was not possible to establish whom these initials belonged to - whether boy, master or friend of the school.

The shells were re-named according to the 5th Edition of "Shells of New Zealand" by A.W.B. Powell and where possible all relevant data from the original cards was transferred to the new system. In most cases the original catalogue number was used although difficulties arose here due to the collection obviously having been catalogued at least twice previously with two different numbering systems. Where original numbers could not be used a system starting from 1601 was begun. The re-naming of the Gastropoda was checked by Dr Frank Climo, Curator of Mollusca at the National Museum, Wellington, who at the same time gave the benefit of his current research into the Land Snail population of New Zealand.

One can't help wondering how many other such collections lie neglected in school drawers, etc., around the country simply awaiting an energetic Headmaster or Science Teacher to become interested enough again to have them brought up to date with the naming system and so provide a valuable teaching aid with a small sense of history attached. Hopefully this article will give some of you, who still have an attachment to a school somewhere, either as parent or ex-parent, the impetus to go looking or asking, whether you too can do what I did - after all it wasn't really such a mammoth task - once it was completed !!!

A SHELL COLLECTING PROJECT IN WEST NELSON

Mr Peter Cresswell, a former President of the Wellington Shell Club, has been living at Lower Moutere, Nelson, since November 1980. He has been actively collecting in his new home territory. The following is from a letter received from him.

"David Roscoe, an avid student of minute land shells, and I addressed a meeting of the Nelson Caving Club telling them of the occurrence of snails in the caves which they explore. Club members frequently enter the labyrinth of cave systems that abound in the north-west Nelson area and would be able to collect and examine what could be quite exciting material which would enlarge our knowledge of the subterranean snails of New Zealand. Their interest was high, and from remarks at the meeting we are confident that a significant amount of useful material will be collected. The co-operation of this Club will greatly assist us in a survey of the cave fauna. Some of these caves extend for great distances underground, one of them for possibly 30 or 35 kilometres, which may be a record for the southern hemisphere.

On the land snail side progress is barely beginning. I have arranged for a local helicopter pilot to drop me on the tops of various mountain ranges above the bush line. This will give me easier access to hitherto unexplored (shellwise) areas in the higher bush.

Additionally, a friend with a boat has taken us to some of the off-shore islands where small snails abound - on some moreso than on the mainland.

I have also been indulging in scuba diving about the outer sounds - down to about 60 feet, and around D'Urville Island and French Pass. Bottom samples from these areas have yielded some "hard-to-get" small marine species. I have been making contact with local oyster trawlermen and plan to get out with them from time to time and get some larger bottom samples from deeper water in Tasman Bay and Golden Bay.

All in all, west Nelson is a shell collector's paradise, provided good contacts can be made."

Peter is apparently leaving no stone unturned in an effort to systematically collect the molluscan fauna of his home territory, both land and marine. We hope later to be able to publish some of the results of his studies.

HOW OLD IS THAT SHELL?

Undoubtedly the most difficult questions put to a shell collector are those "how" and "why" questions of the non-collector friend who is being shown the collection. Amongst these is the simple "How old is that shell"? or "How long does it take to make a shell that size"?

Yes, we have to admit to having a very limited knowledge of the basic subject of the life history of the animals that produce the shells that we spend so much time and energy providing scientific names for and arguing the correctness of their taxonomic status. Studies of the growth rates and duration of life of molluscs have actually been very few and far apart in relation to the total number of species recognised. Those that have been conducted have been mainly in relation to the species of commercial and economic importance, and even these are almost entirely bivalves (oysters, scallops, mussels, etc.)

In his "Shells of New Zealand" (5th edition plate 45) Dr Powell has illustrated a bivalve shell with rings indicating annual growth stages, remarking, "The age of most bivalves can be estimated by counting the annual rings. That is the more prominent of the concentric ridges, which are caused by cessation of growth during the colder winter months. Disturbance rings are old intermittent ridges of lesser magnitude caused by arrested growth due to some temporary adverse condition".

Unfortunately, all bivalves are not so obliging as to provide easily seen annual rings. As Dr Powell points out the climatic change in winter inhibits growth. In tropical areas however, where there is no significant change of seasonal climate there is not the same cause to slacken growth at a regular annual interval. To assess the age of shells under such conditions must necessitate the use of some other criteria..... but what? When it comes to assessing the age of gastropods we are hopelessly inadequately informed of any method we can use. Some studies have been made; but once again they have been of no significant number of species. In the case of those species which leave varices representing the outer edge of the aperture at earlier growth stages, we could, if we knew the time intervals between the rest periods make some assessment of the age of a specimen. Some such studies have been made, but they represent only a minute fraction of the gastropods. In any case, such studies made of aquarium specimens may not be typical of what actually occurs in the natural habitat.

There is therefore, a limitless field for study and observation open to shell collectors, and indeed to naturalists in general, to help us to answer that good old question "How old is that shell"? A farmer can tell the age of his horse, or cow or sheep by looking at its teeth.....but what shell collector knows anything about the age of his Conus textile or Cypraea tigris?

In this connection, and in reference to Dr Powell's illustration, the following article is of considerable interest. Written by Dr H.C. McMillan, this was first published in "Pacific Northwest Shell News", Vol II, No 2, March 1962.

"Some years ago I was studying the razor clams of the west coast and was involved in the making of logical regulations for the legal control of the fishery. The biological basis of control is the age of clams and the key to age determination is the growth rings of the shells. Near Kukak Bay (Alaska) I found the very beautiful Tellina lutea, with all the bright sunrise and sunset colours on the inside of the shells. I save a few specimens and studied them in relation to the age-growth studies I was making. Apparently some of them were very old. The winter marks were definite and consistent. If my readings were correct, some of my specimens were 45, 46 and 47 years old.

One mark disturbed me. It appeared to be two winter rings close together, and could have been caused by an unusual climatic condition or a heavy storm locally. Counting back from the edge, I concluded that the evidence indicated the year 1912, and the time as being in the spring about the time the clam started to grow.

I then dug a large number of specimens of all ages. On each shell I found what I came to call the "1912 Mark". Shells which were not old enough to go back to 1912 had no double rings. Therefore, the cause must have been something that happened only once in the last 47 years.

After some time, I asked an old-timer in the community what had happened in the spring of 1912. Immediately he began to tell me of the Katmai eruption in April 1912. At night, a great volcano stood in the local mountain chain. In the morning, the entire mountain had been blown away and only a big hole remained at the spot. Ashes fell on the roofs of Kodiak, 80 or more miles away and crushed them. All summer, the water for miles around was covered with ash and pumice. Nothing grew normally; not only the shells, but the trees were also marked.

I then had no doubt that the annual ring method of age determination was sound. People that claimed the ages could not be determined accurately from shells had only failed to learn to read."

Tellina lutea Wood, commonly known as the Great Alaskan Tellina, is a widely distributed species occuring on both sides of the northern Pacific Ocean. On the eastern side it is found as far south as Cook Inlet in Alaska and on the western side as far south as northern Japan. It is a large shell up to about four inches long living on a sandy bottom in moderate depths down to around fifty metres. Fir a shell from such a cold water region it is unusually colourful, whitish with pink overtones, a greenish periostracum, and rosy inside.

Mt Katmai is a volcano on the Alaska Peninsula, close to the Valley of Ten Thousand Smokes ..... height 6970 feet ..... it blew its top off in 1912 in an exceedingly violent eruption.

HANDY HINTS DEPARTMENT

The following is a note from Mrs E. Wolf, who has suggested that we establish a "Handy hints" section in this journal.

"I was trying to sort tiny turrids, and was nearly driven up the wall trying to distinguish between some closely related species. As an experiment, I put a small drop of Johnson's Baby Oil in the palm of my hand, and rubbed the shells in it. This seemed to bring up any colour there was in the shells, and make the outline shape of them easier to see. After I had finished my sorting task I gave the shells a rub with a soft clean cloth which removed any stickiness."

Here is an idea used by one of our members and passed on as a helpful hint for others.

There are many questions collectors have that are not easily solved at the time they arise. We are therefore opening a section of this journal to members to submit questions about the treatment and handling of shells, hoping that others may have useful suggestions to make.

As a starter, here are a couple of problems someone may have an answer to.....

What can one do to clean off mould that has developed on chitons that have been lying, apparently quite clean, in the cabinet for years?

How can one remove varnish or lacquer that has been painted on shells?

AUSTRALIAN COWRIES

by W.J. Paul

The family Cypraeidae is represented in the New Zealand fauna by only two species, both of which came to notice in quite recent times, and are found in the vicinity of the Poor Knights Islands and the east coast of Northland. These two species, Cypraea cernica and C.vitellus, are tropical forms which have reached New Zealand not from Australia but from the central Pacific.

In Australia a vastly different position is seen, a long list of Cypraea species occurring in the fauna. The species found in Australia fall into two categories in the two major marine climatic regions - the tropical and subtropical north, and the colder water of the south. One of the major problems in cowry taxonomy has been the much discussed problem of the number of species to be recognised in the group segregated by some authorities as the genus (or subgenus) Notocypraea in the colder waters of the southern Australian coasts.

Much has been written on the cowries, many authors producing classifications, and few of them agreeing. Today we are little further ahead in accepting a subdivision of the Cypraeidae into sub-families, as has been done by some writers, or even into genera, as has been done by many, than we were fifty years ago. The validity of the many genera which have been proposed is by no means accepted universally, the criteria on which many have been based being of doubtful stability. Workers in the field of cypraeid taxonomy have now generally reverted to the use of the one genus Cypraea for the whole family, and in many major collections we find the species arranged either alphabetically or in regional groupings. Some authors, Schilder and Iredale in particular, set about naming lots of regional forms as sub-species of widely distributed species. The vast majority of such sub-species names are untenable on account of insufficient distinctness and intermerging, so that it is desirable in view of current knowledge not to recognise taxa below the species level. The great majority of the sub-species names that have been introduced could be ofutility only as forma and without taxanomic value.

The monumental work of C.M. Burgess "The living Cowries" (A.S. Barnes & Co., New York, 1970) has straightened out many problems in the family.

From a combination of sources - my own experience, correspondence with Australian collectors, notes in the publications of Australian shell collectors' clubs, published check-lists, the general literature available on Australian molluscs, together with the information compiled by Burgess - it has been possible to compile a list of the species of Cypraea which occur in Australia. This list is not claimed to be exhaustive; some species actually collected in Australia may have escaped my attention.

The great majority of cowries have been named more than once, for very few species are there no synonyms. The species names in the following list are those recognised by Burgess, and the synonyms listed are as recognised by him. I have not given the full synonymies he has recorded, but have listed names commonly used in popular modern literature and under which shells are now likely to be found in collections.

As mentioned earlier one of the most confusing groups in the family is the series of species, sometimes referred to as Notocypraea, which occur in the colder waters of the southern Australian shores. There is some affinity between these and the cold water cowry species of South Africa. In this group Burgess has recognised five species, and of these the following is the full list of species and their synonyms.

Cypraea angustata Gmelin 1791
= emblema Iredale 1931, molleri Iredale 1931, verconis Cotton and Godfrey 1932

Cypraea comptonii Gray 1847
= subcarnea Beddome 1896, mayi Beddome 1897, albata Beddome 1897, wilkinsi Griffiths 1959, trenberthae Trenberth 1961, casta Schilder and Summers 1963

declivis Sowerby 1870

piperita Gray 1825
= bicolor Gaskoin 1849, dissecta Iredale 1931 occidentalis Iredale 1935

Pulicaria Reeve 1846
=euclia Steadman and Cotton 1946

Whether Burgess' grouping of these difficult species is maintained by future researchists remains to be seen.

Cypraea annulus Linne 1758
= annularis Perry 1811, noumeensis Marie 1869, scutellum Schilder & Schilder 1937, dranga Iredale 1939

arabica Linne 1758
= asiatica Schilder & Schilder 1939, dilacerata Sch&Sch 1939, immanis Sch&Sch 1939, brunnescens Cate 1964

argus Linne 1758
= contrastriata Perry 1811, ventricosa Gray 1824, concatenata Dautzenburg 1903

armeniaca Verco 1912

asellus Linne 1758
= bitaeniata Geret 1903, kawakawa Cotton and Steadman 1943, vespacea Melvill 1905

bistrinotata Schilder & Schilder 1937
= cicercula Kiener 1843, cicercula Reeve 1846,

caputserpentis Linne 1758
= caputanguis Philippi 1849, argentata Dautzengug-Bouge 1933, mikado Sch&Sch, kenyonae Sch & Sch 1938

carneola Linne 1758
= propinqua Garrett 1879, thepalea Iredale 1939, titan Sch & Sch 1962
caurica Linne 1758
= dracaena Born 1778, derosa Gmelin 1791, elongata Perry 1811, oblongata Melvill 1888, longior Iredale 1935, thema Iredale 1939, blaesa Iredale 1939
chinensis Gmelin 1791
= cruenta Dillwyn 1817, splendens Taylor 1916, sydneyensis Sch & Sch 1938, whitworthi Cate 1964
cernica Sowerby 1870
= tomlini Schilder 1930, prodiga Iredale 1939, marielae Cate 1960, viridicolor Cate 1962
cicerula Linne 1758
= margarita Dillwyn 1817, vuluvala Steadman & Cotton 1943
clandestina Linne 1758
= moniliaris Lamarck 1810, whitleyi Iredale 1939, extrema Iredale 1939
contaminata Sowerby 1832
= distans Sch & Sch 1938, malaysiac Sch & Sch 1940
cribraria Linne 1758
= fallax Smith 1881, exmouthensis Melvill 1888, melwardi Iredale 1930, zadela Iredale 1939, orientalis Sch & Sch 1940
cylindrica Born 1778
= subcylindrica Sowerby 1870, sowerbyana Schilder 1932, sista Iredale 1939, wangga Steadman & Cotton 1943
decipiens Smith 1880
depressa Gray 1824
= dispersa Sch & Sch 1939
eburnea Barnes 1824
= mara Iredale 1939
eglantina Duclos 1833
= niger Roberts 1885, couturieri Vayssiere 1905, perconfusa Iredale 1935
errones Linne 1758
= bimaculata Gray 1824, ovum Kiener 1843, coxi Brazier 1872, nimiserrans Iredale 1935, proba Iredale 1939, magerones Iredale 1939
erosa Linne 1758
= phagedaina Melvill 1888, chlorizans Melvill 1888, purissima Vredenburg 1919
felina Gmelin 1791
= listeri Gray 1825, ursellus Kiener 1843, fabula Kiener 1843, melvilli Hidalgo 1906, velesia Iredale 1939
fimbriata Gmelin 1791
= waikikiensis Schilder 1933, durbanensis Sch & Sch 1938
friendi Gray 1831
= scotti Broderip 1831, thersites Gaskoin 1849, vercoi Schilder 1930, contraria Iredale 1935

Cypraea globulus Linne 1758
= affinis Gmelin 1791, brevirostris Sch & Sch 1938
gracilis Gaskoin 1849
= fimbriata Sowerby 1837, macula Angas 1867, hilda Iredale 1939
guttata Gmelin 1791
= brocktoni Iredale 1930, azumai Schilder 1960
haddnightae Trenberth 1973
hammondae Iredale 1939
= raysummersi Schilder 1960
helvola Linne 1758
= chalcedonica Perry 1811, citrinicolor Iredale 1935,
hesitata Iredale 1916
= umbilicata Sowerby 1825, beddomei Schilder 1930, howelli Iredale 1931
hirasei Roberts 1914
= queenslandica Schilder 1966
hirundo Linne 1758
= neglecta Sowerby 1837, cameroni Iredale 1939, peropima Iredale 1939
histrio Gmelin 1791
= westralis Iredale 1935
hungerfordi Sowerby 1888
= coucomi Schilder 1965
isabella Linne 1758
= controversa Gray 1824, cavia Steadman & Cotton 1943 lemuriana Steadman & Cotton 1946
kieneri Hidalgo 1906
= hirundo Sowerby 1837, marcia Iredale 1939, vitiensis Steadman & Cotton 1943
labroliniata Gaskoin 1849
= nashi Iredale 1931, percomis Iredale 1931, macullochi Iredale 1939
langfordi Kuroda 1938
= moretonensis Schilder 1965
limacina Lamarck 1810
= facifer Iredale 1935, monstrans Iredale 1935
lutea Linne 1758
= bizonata Iredale 1935
lynx Linne 1758
= vanelli Linne 1758, caledonica Crosse 1869, pacifica Steadman & Cotton 1943
mappa Linne 1758
= alga Perry 1811, rosea Gray 1824, geographica Sch & Sch 1933, rewa Steadman & cotton 1943
marginata Gaskoin 1849
mauritiana Linne 1758
= regina Gmelin 1791, calxequina Melvill & Standen 1899
miliaris Gmelin 1791
= magistra Melvill 1888, metavona Iredale 1935
microdon Gray 1828
minoridens Melvill 1901
= microdon Sowerby 1932, fimbriata Garrett 1879, blandita Iredale 1939

Cypraea moneta Linne 1758
= icterina Lamarck 1810, rhomboides Sch & Sch 1933, monetoides Iredale 1939, harrisi Iredale 1939, isomeres Iredale 1939

nucleus Linne 1758

onyx Linne 1758
= succincta Linne 1758, adusta Lamarck 1820, umbilicata Dillwyn 1823

ovum Gmelin 1791
= cruenta Gmelin 1791, sophiae Brazier 1876

pallidula Gaskoin 1849
= rhinoceros Souverbie 1865

punctata Linne 1771
= atomaria Gmelin 1791, muscarum Lamarck 1810, persticta Iredale 1939, carula Iredale 1939

poraria Linne 1758
= theoreta Iredale 1939

pyriformis Gray 1824

quadrimaculata Gray 1824
= garretti Sch & Sch 1938

reevei Sowerby 1832

rosselli Cotton 1948

saulae Gaskoin 1843
= nugata Iredale 1935, jensostergaardi Ingram 1939

scurra Gmelin 1791
= indica Gmelin 1791, antelia Iredale 1939 vono Steadman & Cotton 1943

staphylaea Linne 1758
= cosobrina Garrett 1879, descripta Iredale 1935

stolida Linne 1758
= brevidentata Sowerby 1870, irvinae Cox 1889, fluctuans 1935, deceptor Iredale 1935

subviridis Reeve 1835
= vaticina Iredale 1931, dorsalis Sch & Sch 1938

talpa Linne 1758

teres Gmelin 1791
= pentella Iredale 1939, hermani Iredale 1939

testudinaria Linne 1758
testudionso Perry 1811

tigris Linne 1758
= pardalis Shaw 1795, lynchichroa Melvill 1888, volai Steadman & Cotton 1943, amboolee Steadman & Cotton 1943

ursellus Gmelin 1791
= coffea Sowerby 1870

valentia Perry 1811
= princeps Gray 1824

venusta Sowerby 1846
= thatcheri Cox 1869, episema Iredale 1939, sorrentensis Schilder 1963

Cypraea vitellus Linne 1758
= distorta Cox 1889, orcina Iredale 1931
walkeri Sowerby 1832
= continens Iredale 1935, merista Iredale 1939
xanthodon Sowerby 1832
yaloka Steadman & Cotton 1943
ziczac Linne 1758
= undata Lamarck 1810, vittata Deshayes 1831, signata Iredale 1929

In addition to the five species inhabiting the cold water areas of the southern Australian coasts, the following are endemic Australian species:-

armeniaca, deceipiens, friendii, haddnightae, hesitata, marginata, reevei, rosselli, venusta, xanthodon

SHELLS COLLECTED AT MAHIA BEACH

The following list of shells collected at Mahia Beach has been compiled by Mrs D.J. Boswell of Wanganui. These were all found in the course of two holidays at that locality ..... 15 to 20 November 1968 and 9 to 14 November 1973.

Amphineura

Ischnochiton maorianus Iredale 1914
Eudoxochiton nobilis (Gray 1843)
Amaurochiton Glaucus (Gray 1828)

Gastropoda

Haliotis iris Gmelin 1791
Haliotis australis Gmelin 1791
Haliotis virginia crispata Gould 1847
Scutus breviculus (Blainville 1817)
Tugali elegans Gray 1843
Cellana ornata (Dillwyn 1817)
Cellana denticulata (Martyn 1784)
Cellana radians (Gmelin 1791)
Cellana strigilis (Hombron & Jacquinot 1841)
Asteracmea suteri (Iredale 1915)
Notoacmea daedala (Suter 1907)
Patelloida corticata (Hutton 1880)
Atalacmea fragilis (Sowerby 1823)
Melagraphia aethiops (Gmelin 1791)
Herpetopoma larochei (Powell 1926)
Herpetopoma bella (Hutton 1873)
Diloma subrostrata (Gray 1835)
Diloma zelandica (Quoy & Gaimard 1834)
Diloma bicanaliculata (Dunker 1844)
Cantharidus opalus (Martyn 1784)
Micrelenchus dilatatus (Sowerby 1870)
Micrelenchus tenebrosus (A.Adams 1853)
Micrelenchus sanguineus (Gray 1843)
Micrelenchus rufozonus (A.Adams 1853)
Cantharadella tesselata (A.Adams 1851)
Fossarina rimata (Hutton 1884)
Trochus viridis Gmelin 1791
Trochus tiaratus Quoy & Gaimard 1834
Thoristella oppressa (Hutton 1878)
Maurea tigris (Gmelin 1791)
Maurea punctulata (Martyn 1784)
Umbonium zelandicum (Hombron & Jacquinot 1855)
Antisolarium egenum (Gould 1849)
Turbo smaragdus Gmelin 1791
Cookia sulcata (Gmelin 1791)
Nerita atramentosa Reeve 1855
Littorina cincta Quoy & Gaimard 1833
Littorina unifasciata antipodum Philippi 1847
Risellopsis varia (Hutton 1873)
Eatoniella huttoni (Pilsbry 1888)
Rissoina chathamensis (Hutton 1873)
Merelina lacunosa (Powell 1940)
Merelina crosseaformis (Powell 1926)
Potamophygus antipodarum (Gray 1843)
Maoricolpus roseus (Quoy & Gaimard 1834)
Zeacolpus pagoda (Reeve 1849)

Zeacumantus lutulentus (Kiener 1841)
Zeacumantus subcarinatus (Sowerby 1855)
Seila chathamensis Suter 1908
Struthiolaria papulosa (Martyn 1784)
Sigapatella novaezelandiae (Lesson 1831)
Zegalerus tenuis (Gray 1867)
Maoricrypta monoxyla (Lesson 1831)
Tanea zelandica (Quoy & Gaimard 1832)
Mayena australasia (Perry 1811)
Poirieria zelandica (Quoy & Gaimard 1833)
Muricopsis octogonus (Quoy & Gaimard 1833)
Xymene plebeius (Hutton 1873)
Xymene gouldi (Cossman 1903)
Lepsiella scobina (Quoy & Gaimard 1833)
Lepsiella scobina albomarginata (Deshayes 1839)
Haustrum haustorium (Gmelin 1791)
Lepsithais lacunosus (Bruguiere 1789)
Liratilia sinuata Powell 1937
Zemitrella choava (Reeve 1859)
Cominella adspersa (Bruguiere 1789)
Cominella maculosa (Martyn 1784)
Cominella glandiformis (Reeve 1847)
Cominella quoyana (A.Adams 1854)
Cominella virgata H. & A.Adams 1853
Austrofusus glans (Roding 1798)
Buccinulum linea (Martyn 1784)
Penion sulcatus (Lamarck 1816)
Taron dubius (Hutton 1878)
Egestas waitei (Suter 1909)
Amalda depressa (Sowerby 1859)
Alcithoe swainsoni Marwick 1926
Marginella mustelina (Angas 1871)
Marginella pygmaea Sowerby 1846
Marginella cairoma Brookes 1924
Phenatoma rosea (Quoy & Gaimard 1833)
Phenatoma zealandica (Smith 1877)
Neoguraleus lyallensis tenebrosus (Powell 1926)
Neoguraleus sinclairi (Gillies 1882)
Duplicaria tristis (Deshayes 1859)
Cirsotrema zelebori (Dunker 1866)
Epitonium jukesianum (Forbes 1852)
Turbonilla zealandica (Hutton 1873)
Marinula filholi Hutton 1878

Scaphopoda

Dentalium nanum Hutton 1873

Bivalvia

Nucula hartvigiana Pfeiffer 1864
Solemya parkinsoni Smith 1874
Barbatia novaezelandiae (Smith 1915)
Glycymeris laticostata (Quoy & Gaimard 1835)
Glycymeris modesta (Angas 1879)
Xenostrobus pulex (Lamark 1819)
Perna canaliculus (Gmelin 1791)
Lithophaga truncata (Gray 1843)
Crassostrea glomerata (Gould 1850)
Limatula maoria Finlay 1927
Anomia trigonopsis Hutton 1877
Felaniella zelandica (Gray 1835)
Borniola reniformis (Suter 1908)

Myllita stowei (Hutton 1873)
Cardita aoteana Finlay 1927
Venericardia purpurata (Deshayes 1854)
Mactra discors Gray 1837
Spisula aequilateralis (Deshayes 1854)
Paphies subtriangulata (Wood 1828)
Zearcopagia disculus (Deshayes 1855)
Leptomya retiaria (Hutton 1885)
Tawera spissa (Deshayes 1835)
Protothaca crassicosta (Deshayes 1835)
Notirus reflexus (Gray 1843)
Venerupis largillierti (Philippi 1849)
Hiatella arctica (Linnaeus 1767)
Corbula zelandica Qyoy & Gaimard 1835
Pholadidea spathulata (Sowerby 1850)
Pholadidea tridens (Gray 1843)

Readers are referred also to the lists in the last issue of 'Cookia' (Vol 14 No 2) of shells collected at several localities on Mahia Peninsula by Mrs M. Wotton in January 1981.

MOLLUSCA AT ARAMOANA

Aramoana, at the entrance to Otago Harbour, has been the centre of much controversy since the scheme to erect an aluminium smelter there was proposed. Conservationist groups have been active in opposing industrial development of the area on the grounds of destruction of the local fauna and flora by pollution of the enviroment.

On 7 June 1981 Mrs D.J. Boswell of Wanganui paid a brief visit to the locality, and during the short time she was there collected the shells named in the following list. This is by no means a comprehensive list of the fauna of the area, as her time there was very restricted.

Micrelenchus tenebrosus (A.Adams 1853)
Umbonium zelandicum (Hombron & Jacquinot 1854)
Maoricolpus roseus (Quoy & Gaimard 1834)
Zeacolpus vittatus (Hutton 1873)
Zeacumantus lutulentus (Kiener 1841)
Zeacumabtus subcarinatus (Sowerby 1855)
Xymene plebius (Hutton 1873)
Cominella glandiformis (Reeve 1874)
Amphibola crenata (Gmelin 1791)
Chione stutchburyi (Wood 1828)

Recently (July 1981) some shells were collected at Aramoana which appeared to be of a species not hitherto recorded in New Zealand. They were referred to the National Museum. These specimens have the appearance of being con-specific with the shells presently known as Marinula meridionalis Brazier 1877 (Family Elobiidae). That species is widely distributed in south eastern Australia, being present in Victoria, Tasmania and South Australia, where it is common on salt flats that are covered by the sea at high tide. Further study of the shells is proceeding at the Museum to establish correct taxonomic status.

Its possible presence in other parts of New Zealand is also a subject for investigation.

ARGONAUTA NODOSA COLLECTED AT PLIMMERTON

At the Queen's Birthday week-end a school-boy, Michael Livingstone, picked up an almost perfect specimen of Argonauta nodosa on the rocks at Karehana Bay, Plimmerton. Very few specimens of Argonauta have been recorded from the coast near the entrance to Porirua Harbour. A number have been washed up at Kapiti Island, and there are records from further south along the coast. Michael's shell, although washed right up on the rocks, was only very slightly damaged. When he found it he thought it was a piece of plastic. He has since, however, been assured that he has a quite scarce item for this part of the country.

THE PROBLEM OF NOTOACMEA BADIA

by Mary Wotton

It has always seemed odd to me, and no doubt to others interested in the family Acmaeidae, that Notoacmea badia, Oliver 1926, should only occur at St Clair, Dunedin and to date, has not been recorded from anywhere else in New Zealand.

Recently during a brief stay in Dunedin, I was able to visit St Clair beach and collect specimens of N. badia during an afternoon low tide.

St Clair, one of the southern suburbs of Dunedin, is on the Pacific Ocean side, not the harbour side of the city. The beach is a long sandy one which becomes St Kilda's Beach at its eastern end, where it terminates at the base of a rocky cliff. This is the beginning of Otago Peninsula. At the extreme western end, where St Clair Beach starts, a salt water swimming pool has been built adjoining a rocky outcrop into which the outer wall of the pool area has been set. It is in the pools among these rocks where N. badia is found. At their highest point the rocks are about 4-5Ft. from beach level and although it was low tide, the water was still pounding in against the rocks which are thickly encrusted with barnacles. They are accessible from the end where they taper towards the sandy beach and walking barefoot over the barnacles was something of an endurance test! Isolated small specimens of N. badia were found in the shallow rock-pools nearest the beach but as I wound my way over the tops of the rocks, towards the seaward side, the pools became larger and it was in these that the best specimens were found, attached to smooth, submerged rocks. Although fairly abundant, nowhere were several found together but only scattered singly and sometimes two near each other.

I was told that at high tide these rocks are almost covered and in heavy seas the water washes right over them into the adjacent swimming pool.

N. badia was first collected by W.R.B. Oliver and described in 1926 when he placed it in a newly erected subgenus, Thalassacmea. The type specimen which is in the National Museum, Wellington, is described as 10.5 mm long, 9 mm wide, with a height of 3.5 mm. "Shell broadly elliptical, depressed, apex about anterior fourth, posterior slope convex, steep towards margin, anterior slop convex, steep. Apical portion eroded, lower portion slightly roughened. Eroded portion light-coloured, remainder purplish-brown, inside shining, dark brown, region of spatula lighter but variegated with darker markings corresponding with eroded areas outside."

The eroded exterior portion on some of Oliver's specimens which I examined were very heavily pitted especially on the larger shells. The smaller specimens are more worn than pitted. Oliver states that "the species resembles N. Helmsi, but is more depressed and bears no radiating colour-bands."

Of the specimens which I collected all except one correspond to Oliver's description and are identical with the specimens in the National Museum except that the largest is only 10mm long. The remaining shell is completely light coloured with thin brown radial lines on the lower half of the shell and appearing on the internal margin. The apical portion is light coloured and worn as in the typical species. The spatula is identical with all the other specimens, light coloured with splotches of brown.

On examining the shells collected it was noticed that in the interior apical portion of each shell, one of the brown "splotches" was a reclining V-shape (i.e.). This appeared in all the shells and it could seem has nothing to do with the exterior erosion as it is consistent throughout whereas the other "splotches" vary considerably in size, shape and density of colour matching the degree of exterior erosion. The type specimens examined also have this distinctive mark which also appears on the specimen illustrated in Fig. 4 (13) of "New Zealand Mollusca".

The shell itself is very thin and breaks easily when dislodged with a knife or similar tool. The best method of collecting was found to be sliding them off the rocks with the fingers, in the same way as one collects Atalacmea fragilis or other small, delicate limpets.

I had not been able to find a description of the animal to check whether I was indeed collecting N. badia, but as soon as one sees the shell there is no doubt that it is different from other N.Z. members of the family. The animal has a white foot and a turquoise-green mantle.

Although N. badia is nearest in size and shape to N.helmsi, the following differences were noted:

	N. badia	N. helmsi
Exterior	Apex light coloured, always eroded.	Apex eroded in estuarine shells.
	Lower portion brown and rough.	Colour pattern very variable radiating dark lines or sometimes a netted pattern which reaches to the apex in specimens found on open coast. None plain brown.
Interior	Margin shining dark brown, with a lighter band of grey or brown. Spatula oval shaped, creamy white blotched with brown and a constant at the apex.	Margin usually dark brown with external rays showing through. Lighter band of grey or pale green. Spatula brown usually clearly defined and often lighter towards the centre.
Shape and size	Almost circular and of medium height, the apex about anterior fourth.	Broadly oval and may be elevated or moderately depressed. Apex about anterior fourth.

The radula of both species have been examined and described by Oliver and are quite different from each other.

The question remains: Why does N. badia only occur at St Clair? Has it, in fact, been collected elsewhere on the Otago Peninsula and perhaps not been identified as such? The currents around the Otago coast flow in a northerly direction and it would seem logical for larvae to disperse and settle in other suitable habitats along the coast.

References:

Oliver, W.R.B., 1926. Australsian Patelloididae. Trans. N.Z. Inst., Vol. 56 pp. 547-582.

Powell, A.S.W., 1979. New Zealand Mollusca. William Collins, Auckland.

RHYME FOR SHELL COLLECTORS

(Authorship.....shrouded in anonymity)

Here's to the sunburn, the sprain in your back,
The windburn, the chill, the weight in your sack,
And bottles and bags, the unpackable gear
Strapped around you and playfully banging your rear;
Here's to the barnacle gash and the bruises,
The salt in your eyes, and sand in your shoes;
Here's to the stink in the kitchen at night,
The cleaning and scrubbing and sorting out right,
The searching through tomes till your eyes dull with strain
For the needed, elusive, unspellable name;
Here's to the polishing, boxing, arranging,
Consulting, resorting, renaming and changing;
Yes, here's to the weariness, bruises and cuts,
But most of all .... here's to you wonderful "nuts"
Who on collecting, foul weather or fair,
Not minding at all, with a glassey eyed stare,
For the sane of this world who look on in surprise
and miss all the grief, and the fun, and the PRIZE.

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